

WHAT IS CLAIMED IS:

- 2 1. A method of noise estimation in a communication device comprising:  
demodulating a received signal on an empty code channel; and  
4 determining a noise estimate from a resulting demodulated signal.
- 2 2. The method of Claim 1, wherein the empty code channel is an empty Walsh  
code channel.
- 2 3. The method of Claim 1, wherein the empty code channel is a Pilot Walsh code  
channel.
- 2 4. The method of Claim 3, wherein demodulating the received signal comprises  
demodulating quadrature phase symbols of the received Pilot signal.
- 2 5. The method of Claim 1, wherein determining the noise estimate comprises  
determining a magnitude of the demodulated signal.
- 2 6. The method of Claim 5, wherein determining the noise estimate further  
comprises accumulating the determined magnitude of the demodulated signal over a frame.
- 2 7. The method of Claim 1, wherein determining the noise estimate comprises  
determining an energy of the demodulated signal.
- 2 8. The method of Claim 7 wherein determining the noise estimate further  
comprises accumulating the determined energy of the demodulated signal over a frame.
- 2 9. The method of Claim 1 wherein the communication device is a CDMA mobile  
station.

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10. The method of Claim 1 wherein the communication device is a CDMA base  
2 station.

11. A method of noise estimation in a communication device comprising:  
2 calculating a cross product of a received Pilot signal to generate a demodulated Pilot  
signal;  
4 determining an energy of the demodulated Pilot signal; and  
accumulating the energy over a frame to produce a received noise estimate.

12. The method of Claim 11, wherein calculating the cross product comprises  
2 calculating a cross product of the received Pilot signal with a filtered Pilot signal.

13. A method of noise estimation in a communication device comprising:  
2 calculating a cross product of a received Pilot signal in a plurality of fingers of a rake  
receiver to generate a demodulated Pilot signal in each of the plurality of fingers;  
4 time aligning the demodulated signals from each of the plurality of fingers in a  
corresponding plurality of deskew buffers; and  
6 summing the time aligned demodulated signals from the plurality of deskew buffers  
to generate a composite demodulated signal.

14. The method of Claim 13, further comprising:  
2 determining a magnitude of the composite demodulated signal; and  
accumulating the magnitude of the composite demodulated signal over a frame.

15. The method of Claim 14, wherein the communication device is a CDMA  
2 mobile station.

16. The method of Claim 13, further comprising:  
2 determining an energy of the composite demodulated signal; and  
accumulating the energy of the composite demodulated signal over a frame.

17. The method of Claim 16, wherein the communication device is a CDMA  
2 mobile station.

18. A noise estimator in a communication device comprising:  
2 means for demodulating a received signal on an empty code channel to produce a  
demodulated signal; and  
4 means for determining a noise estimate from the demodulated signal.

19. The noise estimator of Claim 18, wherein the empty code channel is an empty  
2 Walsh code channel.

20. The noise estimator of Claim 18, wherein the empty code channel is a Pilot  
2 Walsh code channel.

21. The noise estimator of Claim 20, wherein the means for demodulating the  
2 received signal comprises means for demodulating quadrature phase symbols of the received  
Pilot signal.

22. The noise estimator of Claim 18, wherein the means for determining the noise  
2 estimate comprises means for determining a magnitude of the demodulated signal.

23. The noise estimator of Claim 22, wherein the means for determining the noise  
2 estimate further comprises means for accumulating the magnitude of the demodulated signal  
4 over a frame.

24. The noise estimator of Claim 18, wherein the means for determining the noise  
2 estimate comprises means for determining an energy of the demodulated signal.

25. The noise estimator of Claim 24 wherein the means for determining the noise  
2 estimate further comprises means for accumulating the energy of the demodulated signal  
over a frame.

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26. The noise estimator of Claim 18 wherein the communication device is a  
2 CDMA mobile station.

27. The noise estimator of Claim 18 wherein the communication device is a  
2 CDMA base station.

28. A noise estimator in a communication device comprising:  
2 means for calculating a cross product of a received Pilot signal to generate a  
demodulated Pilot signal;  
4 means for determining an energy of the demodulated Pilot signal; and  
means for accumulating the determined energy over a frame to produce a received  
6 noise estimate.

29. The noise estimator of Claim 28, wherein the means for calculating the cross  
2 product comprises means for calculating a cross product of the received Pilot signal with a  
filtered Pilot signal.

30. A noise estimator in a communication device comprising:  
2 means for calculating a cross product of a received Pilot signal in a plurality of  
fingers of a rake receiver to generate a demodulated Pilot signal in each of the plurality of  
4 fingers;  
means for time aligning the demodulated signals from each of the plurality of fingers  
6 in a corresponding plurality of deskew buffers; and  
means for summing the time aligned demodulated signals from the plurality of  
8 deskew buffers to generate a composite demodulated signal.

31. The noise estimator of Claim 30, further comprising:  
2 means for determining a magnitude of the composite demodulated signal; and  
means for accumulating the determined magnitude of the composite demodulated  
4 signal over a frame to produce a received noise estimate.

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2 32. The noise estimator of Claim 31, wherein the communication device is a  
CDMA mobile station.

2 33. The noise estimator of Claim 30, further comprising:  
2 means for determining an energy of the composite demodulated signal; and  
means for accumulating the determined energy of the composite demodulated signal  
4 over a frame to produce a received noise estimate.

2 34. The noise estimator of Claim 33, wherein the communication device is a  
CDMA mobile station

2 35. A device for noise estimation in a communication device comprising:  
2 a receiver adapted to demodulate a received signal using an empty Walsh code;  
a noise calculator coupled to the receiver adapted to generate an output comprising a  
4 noise estimate that is based in part on the demodulated received signal; and  
an accumulator adapted to sum the output of the noise calculator over a  
6 predetermined period.

2 36. The device of Claim 35 wherein the receiver comprises:  
2 a plurality of fingers, each finger adapted to demodulate a multipath replica of a  
desired signal and to provide outputs comprising finger noise components; and  
4 a summer adapted to coherently sum the outputs from each of the plurality of fingers.

2 37. The device of Claim 36 wherein each of the plurality of fingers comprises:  
2 a cross product generator adapted to calculate a cross product of signals provided at a  
first input and a second input of the cross product generator to produce a cross product  
4 output; and  
a deskew buffer adapted to store time aligned cross product outputs from the cross  
6 product generator.